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Volume 134, Number 16



WEATHER, p. 2

SAT: 54°F | 36°F Partly sunny



Friday, April 4, 2014

# MIT team wins first in Putnam math contest

MIT claims four out of the five Putnam Fellows in the prestigious competition

> By Kath Xu NEWS EDITOR

MIT took first place in the 2013 William Lowell Putnam Mathematical Competition this year, only the seventh time the Institute has claimed the top prize of \$25,000 since the founding of the competition almost a century ago. This year's team was composed of Benjamin P. Gunby '15, Mitchell M. Lee '16, and Zipei Nie '15, all of whom placed in the top 25. The team members were designated before the competition from among a larger group of MIT students taking the test.

The Putnam is widely considered to be the most prestigious college-level math

competition in the world, with a typical median score of zero out of a total possible 120 points. Students can earn a maximum of 10 points for each of the 12 questions on the test. Questions on this proof-based exam are meant "to test originality as well as technical competence," covering topics from linear algebra to graph theory.

Of the top five scorers this year, four came from  $\widehat{\text{MIT}}$  — Lee, Nie, Bobby C. Shen '17, and David H. Yang '17. The fifth Putnam Fellow, Evan M. O'Dorney, came from Harvard. Each of these Fellows will receive \$2,500 for their performance on the exam. Past Putnam Fellows include Richard P.

Putnam, Page 8



The EECS department unveiled its new teaching area, the Cypress Engineering Design Studio (EDS for short) on Tuesday, April 1. Located at 38-501, EDS is dedicated to building hardware and programming systems, and features laser cutting tools, a soldering station and other fabrication equipment. The new teaching area will be used by existing and new project based classes.

## Number of Students Awarded 25 20 Princeton Stanford Harvard CMU

INFOGRAPHIC BY LENNY MARTINEZ These numbers include any student who received honorable mention or above.

#### **NEWS BRIEFS**

#### MIT sells \$550 million in long-term bonds

In an effort to raise capital to fund academic projects, campus development, and research, MIT sold \$550 million in Series B Taxable Revenue Bonds, according to MIT News.

The bonds mature in 2114 with an annual interest rate of 4.678%, significantly lower than the rate on the last round of century bonds MIT sold in 2011. Those bonds, which MIT used to raise \$750 million in capital for the exact same purposes, had an annual interest rate of 5.623%, which Dave Kansas of The Wall Street Journal's MarketBeat called "super-duper low" at the time.

Locking in on this "historically low cost of

capital for a very lengthy period of time" was part of the motivation for the move, according to MIT News.

The capital raised by the bonds, "combined with gifts and internal funding sources, will provide MIT with flexibility in scope and timing to support the acceleration of campus renewal as well as other strategic research buildings and infrastructure projects over the next decade," MIT News wrote, echoing closely their description of the 2011 bonds.

MIT will make periodic payments on the interest and pay the principal when the bonds mature. The bonds, which are rated AAA by Standard & Poor's, are likely to be purchased by individuals, pension plans, mutual funds, and insurers, according to MIT News.

—William Navarre

# How Kendall Square became a biotech hub

#### Prof. Sharp's Biogen was one of the earliest biotech companies in Cambridge

By Bendta Schroeder

SCHOOL OF SCIENCE

In the 1970s, if you stood at the corner of Main and Vassar streets and looked out from the edge of the MIT campus, you would see nothing but a vacant lot. Kendall Square had been vacated by the decline of manufacturing and by businesses escaping to the suburbs, leaving only a few scattered outposts, such as Draper Laboratories and the Department of Transportation's Volpe

When the leaders of a new company, Biogen, looked for a location for their Cambridge headquarters in 1980, they chose a spot on one edge of that vacant lot, on Binney Street. When Biogen opened in 1982, the company was a pioneer on multiple fronts: it was one of the first few biotech companies. the first company to obtain a recombinant DNA (rDNA) license in Cambridge, and a harbinger of great changes in store for Kendall Square.

While Biogen never left Cam-

bridge, it would move its headquarters for a time to the suburb Weston. But on Feb. 11, the company, now Biogen Idec, celebrated its return to Binney Street. And the contrast between the Kendall Square of 1982 and 2014 could not be greater: This time, Biogen Idec would be joining a bioscience community populated by numerous high-profile biotech companies, research institutes, and startuns

Biogen Idec's relocating celebrations included the unveiling of a series of permanent exhibits featuring some of the people important to the company's history, as well as the dedication of a new building to Biogen co-founder Phillip A. Sharp, an MIT Institute Professor of biology and a member of the Koch Institute for Integrative Cancer Research.

Sharp's Nobel prize-winning discovery of RNA splicing at MIT helped lay the groundwork for Biogen. Naming a Biogen Idec building after a scientist is unusual — as they're usually named after business people — but the name is fitting: In many ways, Sharp's story mirrors that of biotech renaissance in Kendall Square.

#### Finding a Community at

Much of Sharp's scientific career was shaped by searching for and finding the right community. He was not only looking for a place that would give him the right research tools, but also the right people who could provide mentorship, work toward similar goals, and exchange exciting new ideas. Sharp had worked his way from an undergraduate degree in chemistry in 1966 at Union College, a small liberal arts institution not too far from his rural home in the northern hills of Kentucky, to completing a doctorate in physical chemistry in 1969 at the University of Illinois.

His thesis used physical and statistical theory to characterize DNA as a polymer. But when he read the 1966 Cold Spring Harbor Laboratory symposium on "The Genetic Code," he was inspired to join the emerging fields of molecular biology and genetics and sought the right community to help him make the jump.

Sharp found an excellent opportunity in working for Norman Davidson at the California Institute of Technology (CalTech), who had been working as a chemist, but was transitioning into what would become groundbreaking work in molecular biology. Sharp knew that in getting a postdoc p at CalTech, he would be joining "a whole host of very extraordinary young people and professors," he says, with whom he would share the same scientific background and scientific goals.

When Sharp wanted to extend his research into human cells, he looked for a new scientific home. which he found at the Cold Spring Harbor Laboratory in New York. Sharp was particularly pleased to be working under the tutelage of the lab's then-director Jim Watson. "I was totally excited about being in that environment," Sharp explains,

Kendall, Page 11

#### **IN SHORT**

The summer UROP direct funding applications are due Thursday, April 17 at 5 p.m. Students should submit their application at http://web.mit.edu/urop/apply

Campus Preview Weekend (CPW) is next weekend. Start preparing to help welcome the Class of 2018 to campus!

For-credit summer courses will run at MIT this summer. To encourage participation, tuition will be free and housing will be fully subsidized. Fill out the intent to apply form at http:// future.mit.edu/summer-future to be notified when registration opens. One class will be offered in each of mechanical engineering, materials science and engineering, and physics. Two classes will be offered in biology. The change was also announced to the MIT community in an email from Chancellor Cynthia Barnhart PhD '88.

Send news information and tips to news@tech.mit.edu.

#### **PUZZLES WITH NUMBERS**

There is a Techdoku today. It's probably fun. You should do it.

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#### THAT PESKY MASCOT

The Tim faces off with... Tim. FUN, p. 6

#### **CONTEMPORARY COMICS**

It's ok. I don't understand them either. FUN, p. 6



#### **GET YOUR INDIE FIX**

New column reviewing independent films looks at *Broken Kingdom* and Kingdom Come.

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#### **THE POST-SPRING BREAK LULL**

Q.E.D. and the tales of vacation adventures.

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#### Iraq veteran's attack at base echoed rampage in 2009

KILLEEN, Texas — In the aftermath of a deadly rampage at Fort Hood here in November 2009 that left 13 people dead, Defense Secretary Robert M. Gates announced a Pentagon review of the shooting to help ensure, he said, that "nothing like this ever happens again."

Nearly five years later, it did, in eerily similar fashion.

On Wednesday, when a troubled Iraq war veteran — Spc. Ivan Antonio Lopez, 34 — shot and killed three people and wounded 16 others before taking his own life at Fort Hood, he did so in Army uniform after sneaking a high-powered handgun onto the base, just as the 2009 gunman had done. Lopez bought his gun at the same shop near the base where the 2009 gunman, Maj. Nidal Malik Hasan, bought his weapon. Each shooting started in a medical support area for troops, and each ended when the gunman confronted a female police officer rushing to the scene.

There was also a fundamental difference: Officials say there is no indication that Lopez committed an act of terrorism as

But the replay of a mass shooting at Fort Hood, particularly coming on the heels of the shooting spree in September that left 12 people dead at the Washington Navy Yard, raised questions about what lessons Army officials had learned from 2009; how effectively military installations can keep out guns; and how prepared they are to deal with threats from within, including from soldiers or contractors intent on doing harm to others

At Fort Hood, which sprawls for 340 square miles over the Texas prairie, Lopez was being treated for behavioral and mental health issues. To enter the base, he would have undergone no security screening beyond showing his identification and would have passed through no metal detectors.

Personnel are not allowed to carry concealed weapons on military bases. Soldiers on post must register their firearms, which Army officials said Lopez failed to do with the handgun he used in the attack.

Fort Hood's rules for soldiers who are not police officers rely in large part on the honor system, and require all personnel bringing a privately owned firearm onto the base in a vehicle to declare that they are doing so and state why.

"Fort Hood is a big installation," the base's commanding general, Lt. Gen. Mark A. Milley, told reporters Thursday. "We've got a population well over 100,000 here. It would not be realistic to do a pat-down search on every single soldier and employee on Fort Hood for a weapon on a daily basis."

–Manny Fernandez, Serge F. Kovaleski and Eric Schmitt,

#### **Economist to resign from Fed** board to return to Harvard

WASHINGTON — Jeremy C. Stein, a member of the Federal Reserve's board who has raised concerns about its stimulus campaign, will resign at the end of May and return to his previous role at Harvard.

Stein, who joined the Fed in 2012, needed to return within two years to preserve his tenured professorship.

"During my time here, the economy has moved steadily back in the direction of full employment, and a number of important steps have been taken to make the financial system stronger and more resilient," Stein wrote in a letter informing President Barack Obama of his resignation, which was released Thursday by the Fed.

He added, "There is undoubtedly more work to be done on both dimensions."

Stein, an economist and noted academic, has helped to provide an intellectual rationale for the cautious evolution of the Fed's stimulus campaign, which has not succeeded in returning either unemployment or inflation to normal levels.

—Binyamin Appelbaum, The New York Times

# U.S. tried to build a social media site in Cuba, failed

By David E. Sanger THE NEW YORK TIMES

WASHINGTON — The Obama acknowledged administration Thursday that it had attempted, and failed, to build a Twitter-like social media site in Cuba but insisted that it was part of the Agency for International Development's effort to encourage political discussions, not a covert program to overthrow the government.

Arguments over the purpose of the program, called ZunZuneo, arose after The Associated Press published a detailed article about it Thursday, based in part on documents from a contractor for the development agency.

One memo said, "There will be absolutely no mention of United States government involvement."

The program ran from 2008 to 2012, when it abruptly ended, apparently because a \$1.3 million agency contract to start up a textmessaging system ran out of money.

At the time, about 40,000 Cubans were using ZunZuneo, which The AP noted was "slang for a Cuban hummingbird's tweet."

"No business was able to take this idea and utilize it effectively," said Matt Herrick, the agency's spokesman. "So the project ended."

He added that "no private data was collected, and no demographic

At first glance, the program seemed to be in the spirit of many failed efforts by the U.S. government, dating to the Eisenhower and Kennedy administrations, to destabilize the Cuban government.

The idea was to start the system with innocuous messaging, like soccer scores and weather forecasts. The State Department said that the hope was that over time it would promote democracy.

By the standards of American efforts in Cuba, ZunZuneo was on the milder side. It did not involve poison cigars for Fidel Castro, or landings by exiles at the Bay of Pigs. It was similarly unsuccessful - having no apparent effect on the Cuban government.

"It was just dumb," Sen. Patrick J. Leahy, D-Vt., who has long argued for lifting the Cuban trade embargo,

He argued that if U.S. companies were allowed to operate on the island, Twitter would become widely used, even if the Cuban government tried to block it. (A recent effort to ban Twitter in Turkey has been both evaded and mocked.)

The State Department said the ZunZuneo effort was part of broader programs to use the Internet and cellphones.

But Marie Harf, the deputy spokeswoman at the State Department, said critics who equated Zun-Zuneo with a covert program did not understand covert programs.

James Lewis, a cyberexpert at the Center for Strategic and International Studies, described the program as "amateur-hour covertness, which is to say that it wasn't very covert."

The State Department has long viewed text messaging as a potential instrument of so-called street diplomacy, especially after it was widely used in Iran in 2009 to organize protests against the re-election of Mahmoud Ahmadinejad as president.

## Same-sex marriage opponent Eich steps down as Mozilla's CEO

By Nick Bilton

THE NEW YORK TIMES

A little more than a week after becoming chief executive of Mozilla Corp., Brendan Eich is stepping down after an intense debate over his belief that same-sex couples should not be allowed to marry.

After his appointment as the software company's new chief, Eich came under heavy fire from employees and the public for making a \$1,000 contribution in 2008 to support a ban on same-sex marriage in California under Proposition 8.

In an interview Tuesday, Eich defended his views, saying that he was capable of separating his personal beliefs from those of the business he is running. Mozilla makes the popular Firefox Web browser and is considered a pioneer in open source, a collective development process now common in the tech industry.

"I serve at the pleasure of the

board. I would have them ask me to step down," he said. "Until then I have to be CEO 100 percent."

In a blog post on the company's website, Mitchell Baker, the executive chairwoman of Mozilla, said Mozilla did not act quickly enough to respond to criticism of Eich.

'We didn't act like you'd expect Mozilla to act," Baker said. "We didn't move fast enough to engage with people once the controversy started. We're sorry. We must do better."

While Baker did not say directly that Eich's belief's regarding samesex marriage did not reflect the company's ideals, she noted that Mozilla is a company that promotes openness and equality.

"Mozilla believes both in equality and freedom of speech. Equality is necessary for meaningful speech. And you need free speech to fight for equality," she wrote. "Figuring out how to stand for both at the same time can be hard.

Since Eich was appointed chief executive, a number of current Mozilla employees took to Twitter to air their views about the board's choice, with several voicing concern about the appointment, and some employees even suggesting Eich should step down.

John Lilly, the former chief executive at Mozilla, linked on Twitter to the blog post about Eich's resignation and wrote, "Tough times, but reflects so much of what I love about the organization."

Baker said that Mozilla had not yet decided who would take over the position of chief executive, and that the company's board would meet to discuss a new appointment.

"We will emerge from this with a renewed understanding and humility - our large, global, and diverse community is what makes Mozilla special, and what will help us fulfill our mission," she wrote. "We are stronger with you involved."

**WEATHER** 

#### April showers, then a return to sunny skies

By Casey Hilgenbrink

STAFF METEOROLOGIST

Spring has finally made an appearance the last few days thanks to a high pressure taking control of the region Tuesday through Thursday, bringing dry weather and spring-like daily high temperatures in the upper 40s to low 50s°F. Today marks a brief change in this pattern as a low pressure system tracks up from the middle Mississippi River Valley and brings rain

to our region overnight tonight. Expect a cooler high temperature of 43°F today due to easterly winds and increasing cloud cover ahead of the low. Tomorrow, we'll see a return to seasonable conditions as the low pressure moves out and another high pressure settles in to take its place (although a chance of showers remains tomorrow morning as the low exits the region). Expect a pleasant weekend with partly sunny to sunny skies and daily highs in the low to mid 50s°F.

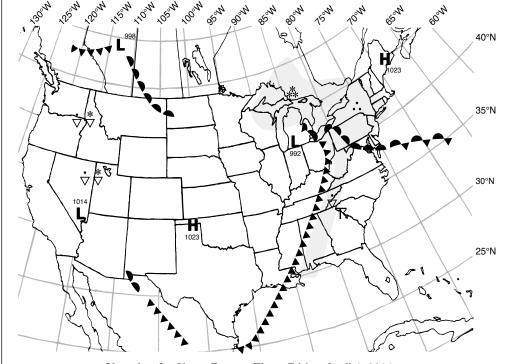
#### **Extended Forecast**

Today: Mostly cloudy, with a high of 43°F (6°C). Northeasterly winds in the morning turning to southeasterly winds by evening at 10-15 mph. Chance of showers late afternoon/in the

Tonight: Overcast, with a low of 39°F (4°C). Southwesterly winds at 10-15 mph. Showers likely.

Tomorrow: Partly sunny, with a high around 54°F (12°C). West winds at 10-15 mph, gusting at 25-30 mph. Chance of showers

Sunday: Sunny, with a high in the mid 50s°F (around 12°C). Monday: Mostly sunny, with a high in the upper 50s°F (around 14°C).



Situation for Noon Eastern Time, Friday, April 4, 2014

eather Systems	Weather Fronts	Precipita	Precipitation Symbols			Other Symbol		
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## Nest labs stops selling hightech smoke detector

By Nick Wingfield

THE NEW YORK TIMES

Nest Labs, the home automation company recently acquired by Google for \$3.2 billion, said Thursday that it was halting sales of its smoke and carbon monoxide detector over safety concerns.

Tony Fadell, the chief executive of Nest, said in a letter posted on Nest's website that it would stop selling the product, Nest Protect, until it fixed a problem with a feature that lets people temporarily disable the alarm by waving their hands in front of the detector. Fadell said Nest was concerned that the feature could be unintentionally activated, potentially delaying the alarm from going off if there was a

fire

Nest also said it was immediately deactivating the feature, which it calls Nest Wave, on smoke detectors already purchased, something it can do remotely. Fadell said the smoke and carbon monoxide detection capabilities of the alarms would continue to function.

"We're enormously sorry for the inconvenience caused by this issue," Fadell wrote. "The team and I are dedicated to ensuring that we can stand behind each Nest product that comes into your home, and your 100 percent satisfaction and safety are what motivates us. Please know that the entire Nest team and I are focused on fixing this problem and continuing to improve our current products in every way

nossible."

He said Nest was not aware of any customers who had experienced the problem.

The wave feature that is the source of its smoke detector's problems is a prime example of how Nest has tried to simplify one of the least glamorous devices in the home. Anyone with a conventional smoke detector knows how easily false alarms can be set off by burned toast and other events that pose no threat to life, sending homeowners scurrying for ladders to remove the smoke detectors and frantically waving towels to silence them.

Nest Wave was designed to make it easier to silence the alarm temporarily by simply waving one's arms beneath it.

# Two women kidnapped from a resort in Malaysia

By Kirk Semple and Floyd Whaley

THE NEW YORK TIMES

KUALA LUMPUR, Malaysia — Gunmen kidnapped a Chinese tourist and a Filipino hotel worker, both women, from a beach resort on an island off the coast of Malaysian Borneo, the Chinese and Malaysian authorities said Thursday, spurring an international manhunt.

The abductions, which occurred late Wednesday, appeared to be the work of insurgents from the nearby islands of the southern Philippines who have been fighting the Filipino government for years, security experts said. The kidnapping risked complicating ties between China and Malaysia, already strained over the disappearance of Malaysia Airlines Flight 370.

The women were taken from the Singamata Reef Resort, a diving and snorkeling retreat built on stilts on Singamata Island off the coast of Sabah, a state on Borneo, in eastern Malaysia.

Chinese tourists at the resort told a Chinese newspaper, The Huaxi Metropolitan Daily that they had heard gunshots as gunmen stormed the hotel, seized the victims and spirited them away on speedboats. Photos posted on the newspaper's website and reportedly taken during the attack show hotel guests crouching behind upturned tables. There were about 60 Chinese guests at the hotel, the paper said.

Various armed groups, including Muslim separatist factions fighting to establish an independent state, operate throughout the southern Philippines and use kidnappings for ransom to help finance their operations.

# FDA approves portable drug overdose treatment

Federal health regulators approved a drug overdose treatment device Thursday that experts say will provide a powerful, life-saving tool in the midst of a surging epidemic of prescription drug abuse. Similar to an EpiPen used to stop allergic reactions to bee stings, the easy-to-use injector — small enough to tuck into a pocket or a medicine cabinet — will be prescribed for emergency use by the relatives or friends of people who have overdosed.

The hand-held device, called Evzio, delivers a single dose of naloxone, a medication that reverses the effects of an overdose, and will be used on those who have stopped breathing or lost consciousness from an opioid drug overdose. Naloxone is the standard treatment in such circumstances, but until now, has been available mostly in hospitals and other medical settings, when it is often used too late to save the patient.

The decision to quickly approve the new treatment, which is expected to be available this summer, comes as deaths from opioids continue to mount, including an increase in those from heroin, which contributed to the death of actor Philip Seymour Hoffman in February. Federal health officials, facing criticism for failing to slow the rising death toll, are under pressure to act, experts say.

"This is a big deal and I hope gets wide attention," said Dr. Carl R. Sullivan III, director of the addictions program at West Virginia University. "It's pretty simple: Having these things in the hands of people around drug addicts just makes sense because you're going to prevent unnecessary mortality."

-Sabrina Tavernise, The New York Times

#### Japan cancels whale hunt off Antarctica

TOKYO — Japan has canceled this year's whale hunt off Antarctica just days after an international court ruled against the killings.

Prime Minister Shinzo Abe said he would comply with the court order, although the ministry in charge of the hunt canceled it for this year only, leaving open the possibility that Japan may try to revive it under different legal reasoning.

Japan had relied on a loophole in a 1986 moratorium on commercial whaling that allowed killings for research purposes. The ruling by the International Court of Justice in The Hague on Monday said that the scientific output from Japan's whaling program in Antarctica appeared limited and suggested that the hunt was continued for political reasons.

While the hunt is not widely popular in Japan, it is backed by a group of nationalistic lawmakers who paint opponents as trampling Japanese culture.

—Martin Fackler, The New York Times

SCHNITZER PRIZE



**DEADLINE APRIL 7** arts.mit.edu/schnitzer/



Photo: Input/Output Paper, 2010-2011. By Jie Qi, 2013 Grant Recipient.



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#### **CORRECTIONS**

To clarify a Tuesday, April 1 article about the election of the Sharma/Ndengeyingoma ticket to the UA presidency/vice

presidency, while Sharma was quoted saying she wanted to re-establish presidential summits in the style of former P/VP Craighead/Walsh, current UA president Sidhanth Rao said in an email to *The Tech* that similar summits did occur this semester, but did not occur during the Fall 2013 semester.

#### **OPINION POLICY**

**Editorials** are the official opinion of *The Tech*. They are written by the Editorial Board, which consists of Chairman Annia Pan, Editor in Chief Austin Hess, Managing Editor Judy Hsiang, and Opinion Editor Jacob London.

**Dissents** are the signed opinions of editorial board members choosing to publish their disagreement with the editorial.

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Letters, columns, and cartoons must bear the authors' signatures, addresses, and phone numbers. Unsigned letters will not be accepted. *The Tech* reserves the right to edit or condense letters; shorter letters will be given higher priority.

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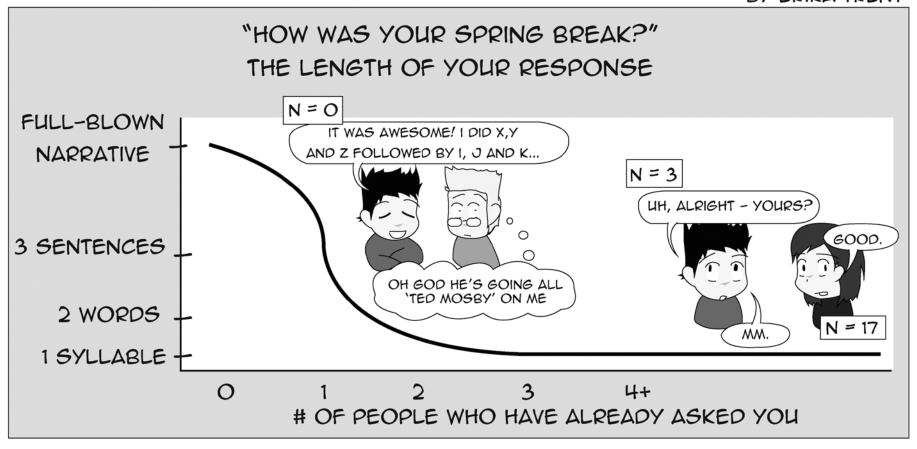
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## Q.E.D. (QUITE EASILY DONE)

#### BY ERIKA TRENT



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#### Sudoku

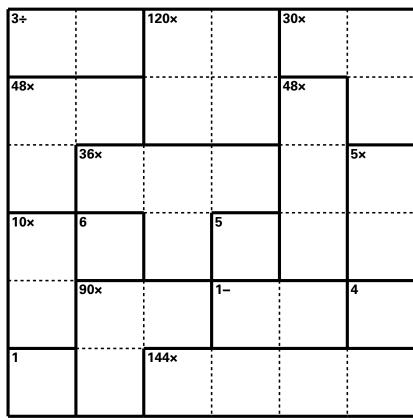
Solution, page 9

3	7	1		6				4
9	2			7				
		5	2					
8						6	3	
8 2			6		8			1
	1	6						5
					4	5		
				3			8	7
5				8		3	1	2

Instructions: Fill in the grid so that each column, row, and 3 by 3 grid contains exactly one of each of the digits 1 through 9.

#### **Techdoku**

Solution, page 9



Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1-6. Follow the mathematical operations for each box.

## Get Cracking by Billie Truitt

Solution, page 9

#### **ACROSS**

- 1 Specialized glove
- 5 French dance
- 10 Good whack
- 14 "You can leave now"
- 15 Really got to 16 "Heavens!"
- 17 '70 Israeli leader
- 18 "Keen!"
- 19 Book-jacket blurbs 20 Protection from harm
- 23 Favoring
- 24 OR workers
- 25 TV research giant
- 27 Tails of tourist trains
- 32 Otello excerpt
- 33 Prefix for friendly
- 34 Moulin Rouge performance 36 Thunderstruck
- 39 Chimney nester
- 41 Pothole patch
- 42 Very short time
- 43 Maui figurine
- 44 Lake Erie city
- 46 American Hunter publisher 47 Homer Simpson's mom

- 49 Redecorator's device 51 Gossipy gathering
- 54 Heavens
- 55 Arctic seabird
- 56 Airlines' cooperative arrangement
- 62 SWAT team weapons
- 64 Under-sink fitting
- 65 Mellowed
- 66 Blue-ribbon
- 67 Don Trump's mom
- 68 Roberts of romance novels
- 69 Picnic playwright
- 70 City north of Cologne 71 Iliad locale

#### **DOWN**

- 1 May honorees
- 2 Billy Bookcase seller
- 3 "No work tomorrow!"
- 4 Performer in a ring 5 Hudgens of High School
- Musical 6 Suits to \_\_
- 7 Spring over
- 8 Gown material

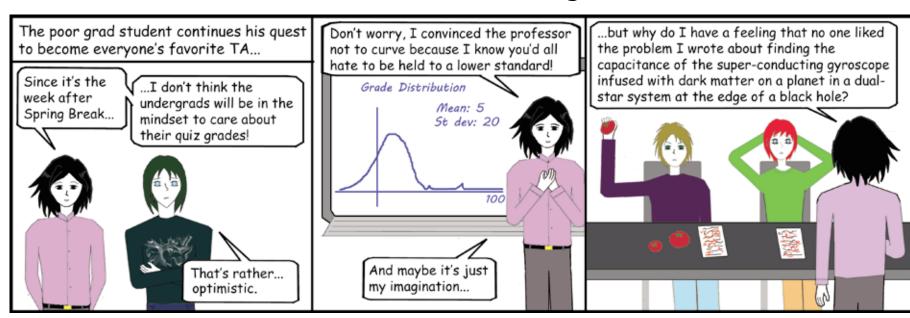
- 9 James Bond, as a teen
- 10 Weep and wail
- 11 Besetting from two
- directions 12 It makes il mondo go round
- 13 Fortune 500 food producer
- 21 Criticize 22 70 Across' land: Abbr.
- 26 Very strong denial
- 27 It's, in Biarritz
- 28 When Macbeth meets the
- witches
- 29 Odds-offering operation
- 30 Inner: Prefix 31 Tonsorial concern
- 35 Expanse
- 37 Neutral shade
- 38 Faculty head
- 40 Barrel of laughs
- 42 Big name in small trucks 44 Tex-Mex casserole
- 45 Plastic kitchen tub
- 48 Pres. advisory team 50 Despot
- 51 Hawaiian Airlines destination

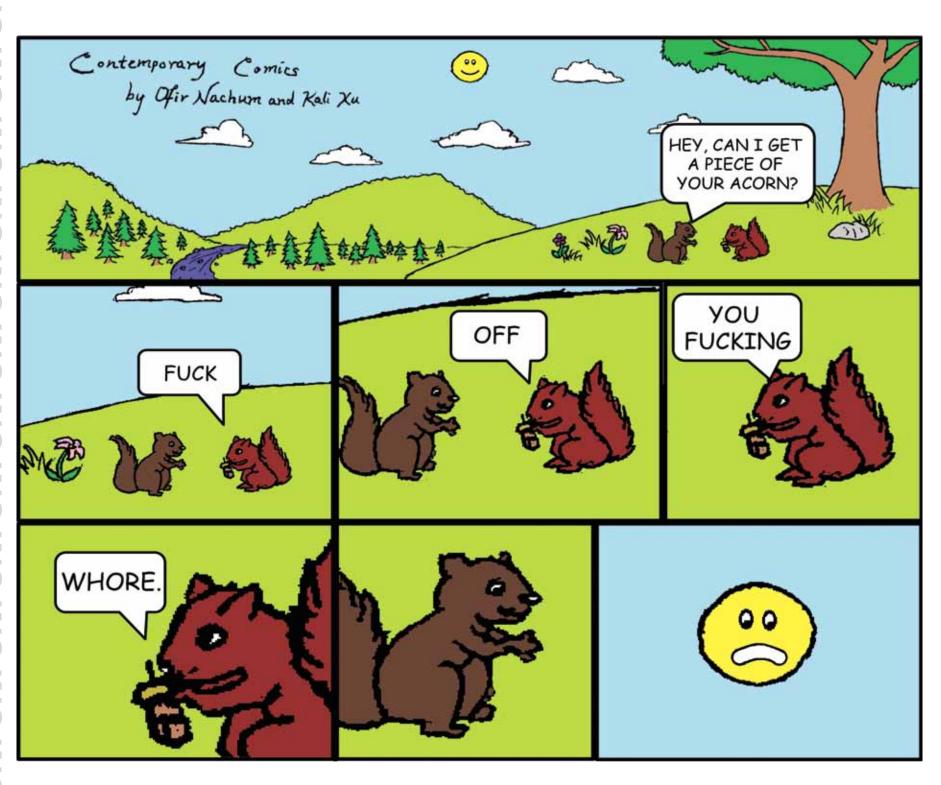
#### 20 28 | 29 30 31 33 34 39 43 46 51 52 55 56 60 61 62 65 68 66 69 70

- 52 Manila's island
- 53 Many flat-screens 57 Important periods
- 58 Levelheaded
- 59 Sikorsky of aeronautics
- 60 Wolfe of whodunits
- 61 Sydney greeting 63 Consult with

# FUNFUNFUNFUNFUNFU

### Somewhere on the Search for Meaning... by Letitia Li







# Broken Kingdom and Kingdom Come

#### The harsh realities of independent filmmaking

By Karleigh Moore ASSOCIATE ARTS EDITOR

Earlier this March, the independent film Broken Kingdom was released on iTunes. The film caught my eye because it was written and directed by one of my favorite actors. Daniel Gillies, who also stars in the film. The movie itself was fascinating — the story builds around two separate narratives, leaving the audience to wonder if these narratives connect. One follows a spiritually lost and self-loathing American writer and a poor teenage girl in the slums of Bogota, Colombia, while the other portrays the life of a Hollywood-based daycare teacher who suffers because she hides a tragic secret.

The cinematography was striking — half of the movie was shot in Bogota and it felt so real, so human. The scenes and dialogues were gritty and filthy. I was considerably impressed by writers and directors, who created and controlled human chaos and despair in a constructive artistic manner. Gillies certainly did an impeccable job.

The story and characters drive this film. As an audience member, you want to know why the main character seems to have thrown away his life to befriend a poor teenage girl in a foreign country. You like the daycare teacher, Marilyn, but there's something just off about her and you want the movie to help you figure out what that

But the film doesn't tell you anything. Like a film ought to, it shows you. Unlike many popular movies that come out of big studios in Hollywood, it doesn't hold viewers' hands by dropping obvious clues about characters and plots. Gillies clearly respects the art of film and his audience enough to let the movie genuinely speak for itself. And I think it is so much better

#### I chose to write about this film because it was almost was never made.

Whether due to the drastically low budget or impeccable management of the writing and shooting of the film, it struck me that there was no wasted shot or line in the movie. It seemed that every scene contributed to my emotional attachment to the movie and understanding of the story the film told. Either way, it was incredibly

I chose this movie as the first for this column because it was almost never made. Sadly enough, this is the case for many films, and many great scripts never reach

But while Gillies was unsure if Broken Kingdom would ever finish filming, he was determined to get something out of this. That project became Kingdom Come, a documentary detailing the struggles of creating an independent film.

This documentary really brought the issues related to creating independent films home for me. Gillies detailed his trek through the US and Europe, seeking and struggling to secure funding for production of his film. Filmmaking is an unpredictable and volatile business, and the production of Broken Kingdom certainly showcased those challenges. But Broken Kingdom was an indie film at heart. Perhaps it makes sense that new directors and writers might have a difficult time actually making their vision a reality. But what shocked me about Kingdom Come was that it showed that this isn't a problem only new filmmakers experience.

The documentary brought in well established actors, directors and producers including Mark Ruffalo, Don Cheadle and Morgan Spurlock, who all spoke to the reality of filmmaking: most films never get made. Sometimes a movie is never more than a script and a story. Other times, films are forced to shut down mid-production because funding is suddenly pulled for one reason or the next.

Independent film is important because it is story-driven — it represents the artistic and communicative nature of film, and is not necessarily economically motivated, as clearly shown by Broken Kingdom. Actors are more likely to be cast because they are a great fit for the role rather than because they bring "guaranteed returns" to the film.

It seems to me that it is in the nature of

#### Broken Kingdom and Kingdom Come

**Directed by Daniel Gillies** (Broken Kingdom) and John Lyons Murphy and Paiman Kalayeh (Kingdom Come)

Starring Daniel Gillies, Rachael Leigh-Cook, and Seymour Cassel

independent film to do things for the right reasons, so to speak — to make films to tell stories, to share a vision and to make a meaningful impact on the audience. This is the vision behind this column — to explore how independent film can help to fix this problem and address this imbalance in media production.

I hope this column will get you to begin to think about independent film. I strongly recommend the films Broken Kingdom and Kingdom Come — they are both excellent exhibits of culture. Broken Kingdom recently debuted on iTunes or you can buy both movies for just \$8 at http://brokenkingdomfilm.com.

Editor's Note: Indie Fix is new weekly column about recent independent films and their contributions to the cinematic arts.

#### **INTERVIEW**

# A conversation with John Lyons Murphy

The producer of Broken Kingdom and Kingdom Come talks about his experience making an independent film

By Karleigh Moore

ASSOCIATE ARTS EDITOR

The Tech interviewed John Lyons Murphy, producer of Broken Kingdom and Kingdom *Come.* Murphy spoke about his experiences with both films, as well as his thoughts on independent film as a whole.

The Tech: To me it seemed that Broken Kingdom wasted no scene or bit of dialogue. There was really nothing superfluous and everything really contributed to the overall experience. It goes without saying that Daniel Gillies wrote a pretty incredible story, but I wonder how having such a limited amount of resources, especially money-wise, could contribute to that sort of efficiency, that

John Lyons Murphy: I think that there are other people who have probably said this, but when you are sort of limited, it forces you to be more creative and more expedient with what assets you do have. So what that means in terms of practicality is trying to limit your locations, your shoot days and limit the amount of characters you have in the piece. There's a lot of different ways you can do that sort of thing. But I think that essentially limits can kind be freeing in a kind of weird way hecause it does force you to be more creative

TT: What do you think is important about independent film? Why should people go to see an indie film instead of maybe going to see something produced by major Holly-

#### "Your job as an investor is to get money back and make a profit." —John Lyons Murphy

JLM: Well it depends on what you're looking for. I love Hollywood movies when they are good, and I love indie films when they are good. I think that the aim with a lot of indie films is to make something that isn't a massmarket product, or [that appeals to] a massive cross section of people. It is much more niche. It is much more aimed at, usually, an older crowd that is not just [looking for] the popcorn movie culture. It sort of depends on what you're looking for — what mood you are in. If you want something more challenging, if you want something more grown-up, touching or moving - something that you've never seen before. Or if you want to go and watch robots blow up, that's cool too if that's what you want to do. It's really more [a matter of] what you're looking for in the moment.

TT: So money was a huge issue for Broken Kingdom as said time and time again in Kingdom Come... It seems that this is a common issue for a lot of films. Is there anyway that the average viewer can support independent film in a constructive sort of way?

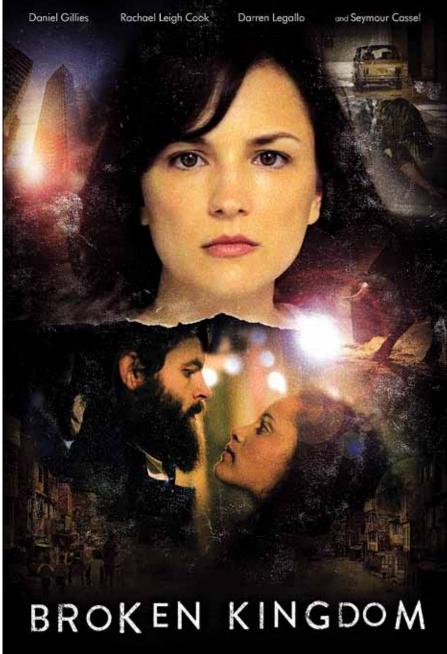
JLM: I think so. With the emergence of things like Kickstarter and just social media in general where you can kind of prove that there is a market for something before you even make it. That's a good development that I wish we had had when we started [filming Broken Kingdom] years ago. That and going to see them in the theater is great and if you can't do that go and rent them. Buy them. Buy them on iTunes, don't just BitTorrent them. Don't steal them [laughs]. That's a way to support indie film. There's a few different

TT: If I remember correctly, one of the reasons that people didn't want to finance Broken Kingdom was because it was about a young prostitute from Colombia — it wasn't a very attractive sell. How should audiences feel about this, that the kind of films that we have access to are sort of pre-censored in this way?

cially for American audiences because there are a lot of films that you're not going to see get made because it is all about how much [the film will make] for the investors and rightly so. Your job for the investor as executive producer is to get that money back and make a profit. So if they don't think they can put it into a certain box where the marketing is easy and there is a built in audience, it is going to be a lot harder for you to make the film, to get the financing. It's better overseas in a lot of cases. Especially in Europe where there's more help put in place, so to speak, there's government run funds and stuff like that. Generally, everyone else pretty much is more supportive of indigenous filmmaking as opposed to the States where we grew up with the studio system and it's very much a capitalist way of producing films. Where in Europe, there are the government grants that you can get to make more private or niche or smaller market films.

TT: What do you think sold Broken Kingdom? What sealed the deal for the people who did end up supporting the film?

JLM: I really think it was the belief in Daniel Gillies. His passion for what he was trying to do and how far he was willing to go to make it happen. That's what started the proj-



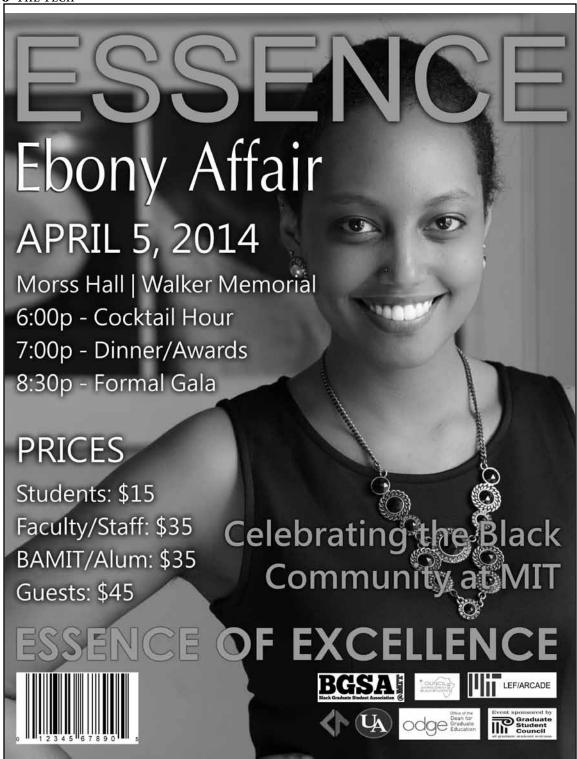
Film poster for the independent movie Broken Kingdom.

ect, that's what drove the project and that is what in the end, finished it. It wasn't just the end of production when it was all in the can. It was Daniel in the editing room with our editor. It was pounding on doors to actually get people to watch the movie and submitting it to festivals. Leveraging relationships and all

these different things - Daniel once he is dedicated to something he is very much an unstoppable force. I think that Daniel's will is what drove Broken Kingdom the whole way

Editor's Note: This interview was edited for

8 THE TECH FRIDAY, APRIL 4, 2014





# MIT places first in math competition

#### Over 4,000 students take Putnam

Putnam, from Page 1

Feynman '39 and current MIT professor Bjorn Poonen, who was a Fellow for all four years of eligibility.

Almost half of the 81 students who earned honorable mention or above are from MIT. The school with the next highest number of students obtaining this award was Harvard, which claimed only 11.

Travis Hance '14, who scored in the top 25, said he took the Putnam "out of fondness for competition math," having competed extensively in high school math competitions.

"I took the Putnam in 2010 and 2011 as well," said Hance. "I got honorable mention both those years, so this year was the best I have done. Maybe this year's problems just played more to my strengths. It also helped that I didn't trip up on any of the easier problems this year like I did in the past."

Like Hance, fellow top-25 scorer Tianyou Zhou '16 competed in

math contests before coming to

"I think there is not much difference between this year's [exam] and previous ones. Both are awesome," said Hance.

This year, no one solved the last question, which described a game played with stones (see accompanying graphic). Each contestant had their own take on what they considered to be their favorite problem.

"I most enjoyed B4 [the tenth question], which felt to me like the most natural question on the whole exam – something one would encounter in the 'mathematical wild,' rather than just a problem contrived for the purposes of a contest," explained Victor Y. Wang '17, who also placed in the top 25. "I like how Professor Cohn from the freshman Putnam Seminar (18.A34) phrased it: B4 was the most 'useful-looking' problem on the test, for some weird definition of 'useful.""

#### The last, unsolved problem

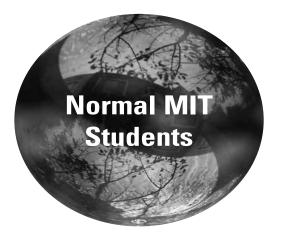
This was the last question, problem B6, on the 2013 William Lowell Putnam Mathematical Competition. None of the over 4000 students who wrote the exam succeeded in solving the problem.

Let n greater than or equal to 1 be an odd integer. Alice and Bob play the following game, taking alternating turns, with Alice playing first. The playing area consists of n spaces, arranged in a line. Initially all spaces are empty. At each turn, a player either

- places a stone in an empty space, or
- removes a stone from a nonempty space s, places a stone in the nearest nonempty space to the left of s (if such a space exists), and places a stone in the nearest nonempty space to the right of s (if such a space exists).

Furthermore, a move is permitted only if the resulting position has not occurred previously in the game. A player loses if he or she is unable to move. Assuming that both players play optimally throughout the game, what moves may Alice make on her first turn?

# Do you live *outside* the bubble?



# Tell us your story



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Friday, April 4, 2014 The Tech 9

#### Solution to Sudoku

from page 7

3	7	1	8	6	9	2	5	4
9	2	4	5	7	3	1	6	8
6	8	5	2	4	1	9	7	3
8	5	7	4	1	2	6	3	9
2	9	3	6	5	8	7	4	1
4	1	6	3	9	7	8	2	5
7	3	8	1	2	4	5	9	6
1	6	2	9	3	5	4	8	7
5	4	9	7	8	6	3	1	2

#### Solution to Techdoku

from page 7

3	1	4	6	5	2
4	2	5	1	6	3
6	4	1	3	2	5
2	6	3	5	4	1
5	3	6	2	1	4
1	5	2	4	3	6

#### **Solution to Crossword**

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S	Α	F	Е	K	Ε	Ε	P	ı	N	G		Р	R	0
			R	N	S			N	1	Е	L	S	Ε	N
С	Α	В	0	0	S	E	S		Α	R	I	Α		
Ε	C	0		C	Α	N	C	A	N		A	W	E	D
S	T	0	R	K		T	Α	R		T	R	ı	С	E
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K	L	A	T	S	C	Н			S	K	Y			
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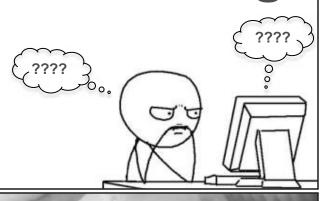
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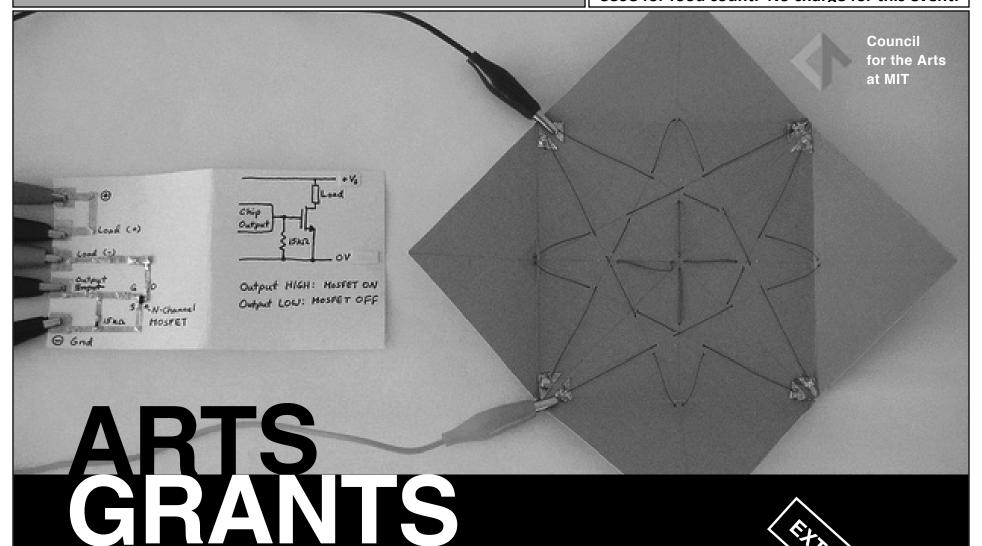
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FRIDAY, APRIL 4, 2014

THE TECH 11

# Biogen helped revive Kendall Square 30 years ago

#### Institute Professor and Nobel Prize winner Phillip A. Sharp co-founded biotech company

Kendall, from Page 1

"because I knew there would be great people who were doing interesting things I could work with." There, his postdoc fellowship eventually grew into a senior research position, where he studied gene structure and regulation using adenoviruses.

But, ultimately, Sharp wanted to work at MIT, to work alongside the likes of David Baltimore, who was using RNA viruses to explore mammalian cell biology, and David Botstein and Harvey Lodish, who both focused on bacterial and mammalian systems. Sharp wanted to be part of MIT's community that focused on molecular approaches to understanding the human cell, which, he believed, was the future of the field.

In 1974, Salvador Luria asked Sharp to join the newly established Center for Cancer Research (CCR) at MIT (now the Koch Institute for Integrative Cancer Research). Sharp accepted, and moved to the center's home in a small building on Ames Street that had been converted from a chocolate factory. Along with Sharp, Luria recruited many other researchers who would usher in what has been dubbed MIT's "golden age" of biology.

At the CCR, Sharp would join a roster that already included Baltimore (who would win the Nobel Prize for his work on RNA viruses), Nancy Hopkins (who would make

important discoveries about retroviral cancers in mice), David Housman (co-founder of Genzyme who identified the genomic location of the Huntington gene), and Robert Weinberg (who would isolate the first oncogene and tumor suppressor gene). Sharp's Nobel Prize-winning discovery of RNA splicing occurred in 1977, only three years after he joined the CCR.

#### But ultimately, Sharp wanted to work at MIT to use molecular approaches to understand cells.

#### **Building Relationships beyond MIT**

When Sharp arrived at the CCR, the center was embroiled in controversy. Its research program was organized around rDNA, a brand new, controversial technology that joined together DNA sequences from multiple sources, allowing scientists to introduce DNA between species.

In 1974, a group of scientists met to discuss their concerns about potential hazards of rDNA. This group, led by Paul Berg, a Stanford University biochemist (and including Baltimore), worried that without setting responsible guidelines for rDNA, scientists could inadvertent-

ly cause serious harm. For instance, they could confer antibiotic resistance to naturally pathogenic bacteria or give bacteria the power to cause tumors that would otherwise harmlessly share the environment with humans. The group published a letter in the Proceedings of the National Academy of Sciences, later known as the "Berg letter." The authors outlined their concerns and recommending a temporary moratorium on rDNA experimentation, which the NIH soon adopted.

But just when the international moratorium on rDNA experimentation was lifted, then-Cambridge Mayor Alfred Velucci called for an additional two-year moratorium, citing objections to the potential risks of rDNA experimentation and lack of public consent. While it was Harvard University's proposal for a new facility that triggered the new moratorium, it was MIT that had the most to lose: The CCR facilities were already built, and its scientists were waiting to begin their rDNA research.

MIT and Harvard worked closely with the Cambridge City Council, developing a joint review board that would ensure rDNA facilities adhered to NIH guidelines. MIT faculty and administration met with the citizens of Cambridge at street fairs, teach-ins, and debates to help them understand rDNA research, and how the NIH guidelines would ensure their safety. By 1977, the scientific community won its case

when the city passed an ordinance adopting the NIH guidelines and lifting the rDNA moratorium.

#### **Mapping Success**

While the rDNA controversy slowed down the progress of research temporarily, MIT's outreach to Cambridge citizens helped the Kendall Square bioscience community flourish. The quick success of the CCR in rDNA research persuaded the philanthropist Jack Whitehead to establish the Whitehead Institute in Kendall Square in 1982, in affiliation with MIT and led by Baltimore. The city's established regulatory framework attracted the attention of biotech venture capitalists.

# MIT and Harvard worked closely with the Cambridge City Council on rDNA facility safety.

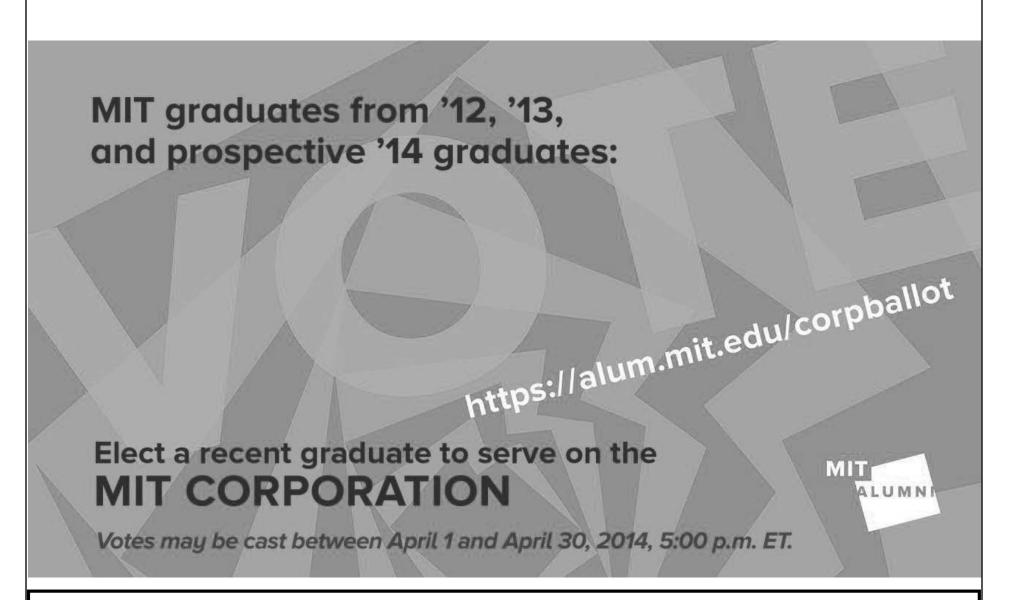
In fact, the innovative science at MIT and the regulatory transparency of Cambridge attracted the attention of Ray Schaefer, a MIT alumnus and venture capitalist. Schaefer began talks with Sharp and Wally Gilbert, a Harvard molecular biologist, that eventually led, in cooperation with several prominent scientists in Europe, to the creation of Biogen in 1978.

By the time Biogen opened its

doors, fears about rDNA subsided in the face of the prosperity of the biotech research community. When Velucci cut the ribbon at Biogen's opening ceremony, he reassured the audience that he had "no fear of recombinant DNA as long as it paid its taxes."

Today, Biogen Idec is one of the many biotech companies and research centers clustered around MIT's campus, many founded by the Institute's leaders. Sharp's colleagues at the Koch Institute — a mix of scientists and engineers working to fight intractable cancers — can take credit for many of these institutions. Since the institute was formed five years ago, its faculty (including the industrious MIT Institute Professor Bob Langer) have formed 18 companies, many of which are located in Kendall Square.

Other biotech companies have come to the neighborhood to take advantage of the healthy infrastructure in Cambridge and its vibrant bioscience community. While there were many individuals and organizations involved, MIT faculty members and administrators indeed played a major role in reviving Kendall Square, because they understood that in order to build a thriving bioscience program, they would have to build a thriving community of talented people — at MIT and beyond. Reprinted with the permission of MIT News (http://newsoffice.mit.



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# MIT falls in first game

Engineers split a doubleheader with Smith College, winning second game

By Charlotte Brackett

After consecutive rainy days and canceled games, the MIT softball team finally opened New England Women's



but held on to an early lead in the second game to take a 6-4 victory over the Pioneers. The Engineers are now 4-8 and 1-1 in NEWMAC play, while Smith is 8-3 and 2-2 in league action.

In the first game, Ali M. Trueworthy '17 was 1-for-4 with one RBI, while Katherine K. Wopat '15 was 1-for-3 with one run. Eleanor E. Fodor '15 pitched 7.2 innings, allowing seven hits and three runs, while striking out nine batters. During the second game, fellow Karly E. McLaughlin '15 led the team with her two runs, going 2-for-4, while Wopat dominated with her three RBIs. Mackenzie K. Donnelly '17 pitched 6.2 innings, allowing seven hits and four runs and striking out two.

#### The Pioneers threatened to send the game to extra innings, but Fodor shut the inning down.

Game one got off to a slow start, remaining locked at zero until almost halfway through. Natalie J. Shifflet '17 was the first Engineer to get a hit, doubling with two outs on the board at the top of the third, but the inning ended when the next batter struck out.

Victoria M. Jensen '16 reached on a dropped fly by the right fielder in the top of the fourth, advancing to second on the error. McLaughlin reached on a fielding error, allowing Jensen to advance to third and then make it home, putting the first run up on the board. Tech furthered its lead over the Pioneers in the fifth inning, when Wopat doubled down the left field line and was sent home on a double by Trueworthy.

Smith officially put the pressure on in the sixth inning when it tied the score without getting a single out. Caroline Kushner had her first hit of the game when she singled to center field, stole second and then advanced to third when Brittney Blokker reached on a fielding error. Blokker stole second and, when Edie Richardson doubled to right field, both Blokker and Kushner made it home. Tech controlled the situation and did not allow any more hits, ending the inning speedily.

After going through the seventh inning with no change to the score, the game went to a tie breaker. With Trueworthy placed on second, Sarah Van Belleghem '15 singled and advanced to second on the throw. Trueworthy advanced to third and tried to power home, but was tagged out when sliding home. With one more out, the inning ended and Kushner was placed on second at the bottom of the eighth. With a sacrifice bunt by Blokker, Kushner advanced to third and scored the game-winning run

The second game was a different story. Following a scoreless first inning, Tech scored its first run in the top of the second at the hands of Donnelly. After retiring the three Smith batters swiftly, Sarah Van Belleghem, Emily Van Belleghem '17 and McLaughlin added three more runs in the top of the next inning to give MIT a 4-0 lead rather early in the game.

off a sacrifice fly by Richardson, ending

the first game.

In the bottom of the third, Brown doubled and advanced to third when Giordano reached on a fielder's choice and stole second. With runners on second and third and just one out, the Pioneers threatened to score their first run but, when the next batter flied out and the one after fouled out, the inning ended.

McLaughlin doubled in the top of the fourth inning, moving on to third when Emily Van Belleghem singled. Helen M. Rosenthal '17 pinch ran for Emily Van Belleghem and advanced to second on a wild pitch. Following a Donnelly single, Rosenthal advanced a base and McLaughlin made it home, scoring her second run of the game. It was not long until Rosenthal followed suit, adding Tech's sixth run of the game off a Wopat sacrifice fly.

In the following inning, the Pioneers scored their first runs, starting when Blokker singled, advancing to second on a sacrifice bunt and making it home on an Allison Snyder triple. When Gina Martucci singled to center field, Snyder followed, adding the second run of the inning. With a quick seventh inning for the Engineers, the Pioneers, once again, threatened to send the game to extra innings when Kushner and Zimmerman scored unearned runs, but Fodor shut the inning down when the next batter struck out looking, ending the game.

Now that the rain has stopped and the sun is shining, the Engineers have a busy week of games ahead of them. Tomorrow, MIT will face another NEW-MAC rival, Babson College, on the road at 3:00 and 5:00 p.m. On Friday, April 4, Tech will play its first home game of the season when it hosts conference foe Emerson College at 3:00 and 5:00 p.m.

#### **UPCOMING HOME EVENTS**

#### Friday, April 4

Softball vs. Emerson College Baseball vs. Emerson College Men's Volleyball vs. Hunter College Softball vs. Emerson College Men's Volleyball vs. Bard College

#### Saturday, April 5

Women's Openweight Crew vs. Boston College Men's Volleyball vs. Southern Vermont College Baseball vs. Emerson College Softball vs. Springfield College Men's Volleyball vs. UC Santa Cruz Men's Tennis vs. U.S. Coast Guard Academy Women's Lacrosse vs. Smith College

3 p.m., Briggs Field 3:30 p.m., Briggs Field 4:30 p.m., Rockwell Cage 5 p.m., Briggs Field 7 p.m., Rockwell Cage

7 a.m., Charles River 11 a.m., Rockwell Cage 12 p.m., Briggs Field 12 p.m., Briggs Field 1 p.m., Rockwell Cage 1 p.m., DuPont Tennis Courts

1 p.m., Steinbrenner Stadium

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